

## The Lane-Emden Equation revisited

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Several results concerning existence and nonexistence of radial (but not necessarily positive) solutions to the nonlinear boundary value problem

$$-\Delta u = \lambda u + |u|^{p-1}u,$$

on a (geodesic) ball of  $R^N$  or  $S^3$ , with Dirichlet boundary condition will be presented. In particular, a whole classification of radial solutions in the Euclidean case will be presented (depending on the possible values of  $\lambda$  and the exponent  $p$ ). The dependence on the underlying space will be illustrated through a discussion of the BVP on  $S^3$ .

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